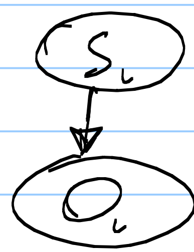
The infected milk model of Fig. 3.2 contains a process model and an observation model.

a.k.a state evolution model

process model



observation model

In the absence of observations, the process model describes the evolution of the variable(s) you are interested in (i.e., the state of what you model)

In the absence of a process model, the observation model gives you the most likely state of your process

In fig. 3.2, they are put together.

The first application of this kind of time-repeating model was in astronomy (Augustus Thiele, ca. 1880). In Thiele's work, both state & observation variables were Gaussian, and the conditional probability "tables" $S_{i-1} \rightarrow S_i$ and

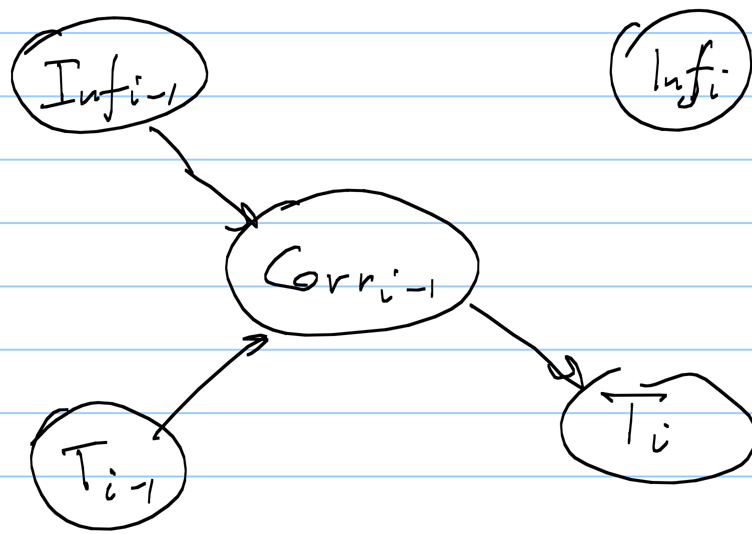
$$\begin{tikzcd} S_i \arrow[d] \\ O_i \end{tikzcd}$$

were conditional Gaussians.

We do very little with cond. Gaussian distributions.

In Thiele's work, the state variable was the position of a celestial body.

Fig. 3.4 could be redrawn with an explicit node indicating whether a test was ~~was~~ working correctly at time $i-1$.



This is the "test correctness" model part of the overall model.